AMENDMENTS TO THE SPECIFICATION:

Amend the paragraph beginning on page 1 at line 7 as follows:

An elastomeric seal, held inside a removable cap (a seal for a bottle cap is narrowly referred to as a "cap liner"), is conventionally thermoformed from a thermoplastic elastomer (referred to as a "TPE") to ~~seal~~ prevent escape of any portion of the contents of the container, and to prevent contamination from the environment. The term "elastomer" is used herein to refer to a synthetic resinous having elasticity such that a test strip 2.5 cm wide and 2.5 mm thick may be stretched in the range from 5% to 100% of its initial length and still return to its original length; further, such elastomer is necessarily thermoplastic and re-processable.

Amend the previously presented paragraph beginning on page 3 at line 25 as follows:

The TPE is chosen from (i) a block copolymer of a vinylaromatic compound and a conjugated diene, which optionally, is at least partially hydrogenated, and (ii) a thermoplastic vulcanizate (referred to as a "TPV"). The block copolymer (i) may be a diblock, triblock, tetrablock or star block copolymer, but is typically a triblock of either styrene-butadiene-styrene, or styrene-isoprene-styrene. The TPE (i) is therefore [[of]] referred to herein, for convenience and brevity, as a "SBS" copolymer. Either (i) or (ii) may be too soft or too hard, before it is plasticized, to be used as a desirable elastomeric product, usable as a removable sealing element in hardness range from Shore 30 A to 90. In either case the starting TPE has an oxygen-permeability greater than 40,000 cc.(2.54 μm)/m^2.day.atm at 23°C which is unsatisfactory. When either (i) or (ii) is too hard, it may be melt-blended with an unreactive polymono(lower)olefin, the olefin having from 2 to 4 carbon atoms, preferably with more than 5% by weight of the TPE. A TPE with unsatisfactory oxygen-permeability is converted to one in which the oxygen-permeability is satisfactory for use as a sealing element when it is plasticized with "liquid polyisobutene", as disclosed herein.

Amend the paragraph beginning on page 4 at line 18 as follows:

Starting TPEs are known TPVs and SBSs. Most preferred is a SBS which is a tri-block ~~copolymers~~ copolymer having either a poly(diene) or a poly(monoolefin) mid-block ("M-block") and vinylaromatic, preferably polystyrene end-blocks ("S-blocks"). There is need for a practical, readily deformable, sufficiently oxygen-impermeable seal which would provide an effective barrier against permeation of oxygen through a cross-section of material less than 10 mm thick, preferably less than 5 mm thick, over a long period of time in the range from about 1 to 10 years.

Amend the paragraph beginning on page 4 at line 30 as follows:

The problem is to provide an injection-moldable, soft and flexible, essentially gas-impermeable TPE seal, usable in a thickness in the range from about 0.1 mm to 10 mm, which is effective as a barrier against the permeation of a deleterious gas through the seal. An effective seal provides both, an ~~adequate~~ adequately low permeation rate and also an ~~adequate~~ adequately low transmission rate. The lower the permeation rate, the lower the transmission rate and the better the barrier properties. For the purpose at hand, only the oxygen permeation rate and oxygen-permeability is considered because of its particular importance. Permeation rate is measured over the actual thickness of the cross-section of polymer. Factors which affect permeation rate are temperature, relative humidity, material thickness, pressure which is usually barometric pressure, and time. Permeability is the same measurement normalized for a thickness of 2.54 μm (1 mil or 0.001 inch) and 1 atm; or, cm^3 .(2.54 μm)/m^2.day.atm; that is, cm^3 of oxygen per 2.54 μm cross-section / m^2 per day.atmosphere. A TPE having sufficiently low gas-permeability will provide a solution to the problem and ensure that the contents of the container will have a desired greatly extended shelf-life relative to the shelf-life obtained with currently used TPE seals.

Amend the previously presented paragraph beginning on page 5 at line 16 as follows:

~~Polyisobutene~~ Polybutene, whether homo- or copolymers of isobutene, 1-butene (α-butylene) and/or 2-butene (ß-butylene, whether cis- or trans-) irrespective of the ratio of the repeating units, and polymers of higher alkenes having from 5 to about 8 carbon atoms ("poly(higher)alkenes"), are typically rubbery solids. But such rubbers, by themselves have unsatisfactorily high oxygen-permeation rates. Since a thin seal of an adequately deformable block copolymer, formed of S-blocks and a M-block of a conjugated diene, or, of a mono(lower)olefin, and no harder than Shore A 90, provides an unsatisfactorily high oxygen-permeation rate, it is not surprising that a rubbery poly(higher)alkene would also provide a comparably unsatisfactory oxygen-permeation rate.

Amend the paragraph beginning on page 5 at line 26 as follows:

To combat the unsatisfactory barrier properties of butyl rubber, U.S. Patent No. 5,731,053 to Kuhn teaches that the butyl rubber is to be heterogeneously blended with high density polyethylene ~~(HDE)~~ (HDPE) or mixtures of HDPE with another polyolefin, so that areas enriched in butyl rubber alternate with areas enriched in the polyolefin. Kuhn also teaches that good barrier properties are obtained with a 50/50 blend of medium density polyethylene (MDPE) and butyl rubber but the blends fail in a headload test. He failed to note that when sufficient polyolefin is added to SBS rubber to improve permeability of the blend, the hardness of the blend is unacceptably high, typically higher than Shore A 90.

Amend the first two paragraphs, the first beginning on page 18 at line 2, and the second 10 beginning on line 10, as follows:

In a laboratory procedure for preparing the basic blend, 1 Kg of SBS flake is poured into a Henschel high intensity mixer and mixing started. While mixing, the desired amount of ~~polybutene~~ polyisobutene is gradually uniformly dispersed throughout the mass of flakes and

sorbed into them over a period of about 2 mins so that they are not oily to the touch. The hardener and remaining ingredients are then added and mixing continued for about an additional 3 min to ensure that the ingredients are homogeneously distributed in the rubber and the temperature of the mass is in the range from about 70°C to 120°C.

The mass of elastomer flakes are fed to the hopper of a Leistritz LSM 34 twin-screw extruder having a 34 mm diameter screw and a L/D ratio of 34. Three zones are maintained in the barrel to melt-blend and extrude the elastomer. The temperature in the first zone ranges from 150°C to 190°C; in the second zone from 160°C to 210°C; and in the third zone from 190° to 220 ° C. The time during which the [[TPV]] TPE stayed in the barrel range from about 1 min to 10 min.

Amend the previously presented paragraph beginning on page 18 at line 17 as follows:

The polyisobutene-plasticized TPV is prepared in a conventional manner except that the mineral oil usually used is substituted with ~~polybutene~~ polyisobutene oil.

Amend Table 1 on page 22 as follows:

TABLE 1

Ingredient	Blend A	Blend B	Prior art blend
Septon 8004 SEBS* triblock	100	100	100
Panalene H-300* ~~polybutene~~ polyisobutene oil	100	---	---
Indopol L-100 ~~polybutene~~ polyisobutene oil	---	100	---
Mineral oil, Mn = 600	---	---	100
Dowlex 2500 polyethylene	120	120	120
PA 20 (PE with 30% PIB rubber)	200	200	200
Irganox 1010 stabilizer	1	1	1
Kemamide E lubricant	3	3	3
Hardness, Shore A	69	69	69

Oxygen permeability (cc.(2.54 gym)/m^2.day.atm)

styrene-(ethylene-butene)-styrene triblock Mn = 290,000

*Mn = 1330

Mn = 510

Amend previously presented Table 2 on page 23 as follows:

TABLE 1

Ingredient	Blend A	Detackified Blends			
Septon 8004 SEBS* triblock	100	100	100	100	100
Panalene H-300* ~~polybutene~~ polyisobutene oil	130	130	140	160	170
F040 PP (melt flow 4)	54	54	54	54	54
Dow Corning 200 silicone oil	--	2.33	2.33	2.33	2.33
Irganox 1010 stabilizer	0.15	0.15	0.15	0.15	0.15
DLTDP antioxidant	0.30	0.30	0.33	0.33	0.33
Kemamide U wax	2.17	2.17	2.17	2.17	2.17
Hardness, Shore A	72	70	68	61	57
Oxygen permeation (cc.mil/m^2.day.atm)	15800	15800	13800	12500	11100

Amend the Abstract beginning on page 31 at line 5 as follows:

A thermoplastic elastomer ("TPE") which is oxygen-permeable is provided with excellent barrier properties against oxygen by melt-blending with a liquid ~~polybutene~~ polyisobutene oil plasticizer in an amount insufficient to render the plasticized elastomer tacky. If made tacky, enough detackifier is used to allow the product to be formed into a removable seal. The TPE may be a conventional thermoplastic vulcanizate or a block copolymer of a vinylaromatic compound, typically styrene, and a conjugated diene, typically butadiene or isoprene, or mixtures thereof; the block may be a diblock, triblock or higher block, but the preferred polyblock copolymer is a triblock with styrene end-blocks and a butadiene/isoprene mid-block. Preferably the diene mid-block is hydrogenated to provide a poly(lower)monoolefin

mid-block. When the TPE is a TPV, some or all of the mineral oil used to make the TPV processable may also be substituted with the ~~polybutene~~ polyisobutene plasticizer. The elastomeric product is particularly useful for sealing elements for containers in which foods, beverages and medical products must be preserved for a long period.